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Range there seems to be all possible varieties and combinations of soils.

The nature of California soils can better be shown by taking some representative soils in the various districts, and giving the complete analysis from several different localities.

Bench Lands and Sierra Foot-hills.

| | Fresno Plains. | Red Loam. | Red Foot-hills. | Red Chaparral. |
|------------------------------|-------------------|-----------|--------------------|-------------------|
| Insoluble matter, and silica | 88.579 | 82.592 | 69.52 | 68.864 |
| Potash..... | .340 | .249 | .38 | .417 |
| Soda..... | .248 | .035 | .07 | .052 |
| Lime..... | 1.163 | 1.021 | .96 | .288 |
| Magnesia..... | .499 | .471 | 1.09 | .207 |
| Br. oxide of mangarese.... | .034 | .018 | .39 | .067 |
| Peroxide of iron..... | 3.267 | 5.811 | 12.42 | 7.705 |
| Alumina..... | 3.221 | 6.283 | 10.97 | 14.443 |
| Phosphoric acid..... | .097 | .043 | .16 | .047 |
| Sulphuric acid..... | .117 | .019 | .01 | .074 |
| Water and organic matter.. | 1.789 | 3.644 | 5.14 | 7.680 |
| Total..... | 99.368 | 100.186 | 101.11 | 99.815 |

The famous bed-rock land, long considered worthless, lies on the borders of the valley. The soluble silica runs to six and eight per cent; alumina, above five per cent. There are only small quantities of potash, soda, and magnesia, but the sub-soil in a measure supplies these deficiencies. Lime is in adequate quantity. This is the soil where giant-powder is used to break up the bed-rock when planting orchards, and the trees afterwards thrive.

The dry bog soil is immensely rich, equal in native qualities to the famous buckshot soils of the Yazoo bottoms, but the surplus of alkaline salts prevents its use until reclaimed by fresh water or gypsum. The wire-grass soil is highly productive. There is a little alkali, but not enough to injure it. The brown adobe is a very representative soil, deep reddish brown in color, contains much sand, and is easily tilled.

Southern California Soils.

| | Mojave Desert. | San Gabriel Valley. | Mesa Land. | Silty Soil. Lower Bench. |
|-------------------------------------|-------------------|---------------------------|---------------|--------------------------------|
| Insoluble matter and soluble silica | 75.964 | 81.12 | 86.21 | 87.511 |
| Potash..... | .928 | .27 | .48 | .634 |
| Soda..... | .078 | .17 | .14 | .070 |
| Lime..... | 1.787 | .68 | .36 | .759 |
| Magnesia..... | 1.782 | 1.77 | .54 | .593 |
| Br. oxide of manganese..... | .026 | .10 | .01 | .025 |
| Peroxide of iron..... | 5.478 | 6.30 | 3.69 | 3.350 |
| Alumina..... | 9.227 | 6.79 | 5.12 | 3.095 |
| Phosphoric acid..... | .056 | .16 | .23 | .200 |
| Sulphuric acid..... | .012 | .07 | .03 | .003 |
| Carbonic acid..... | .456 | — | — | — |
| Water and organic matter..... | 3.903 | 3.07 | 2.60 | 3.132 |
| Total..... | 99.697 | 100.50 | 99.50 | 99.372 |

The foot-hill region ranges in width from ten to fifteen miles. The soils show very considerable differences, but the greater portion are of a "fair to high quality." There is a "mountain adobe" of the high valleys, which in some cases runs very high in magnesia, alumina, and ferric oxide. The "mining slum" is* of exceedingly varying quality, some of it worthless for a long

time; in other sections, a fair garden soil almost immediately. A large percentage of lime is present in many cases in the mining *débris*, or sediment.

The soils of the southern region—south of Tehachipi—are perhaps as varied as in any part of California. The great Mojave Desert is one of the important features. Here extensive tracts only lack water to make them of much cultural value. In fact, this high plain has ample lime and potash, though little humus, and hardly enough phosphoric acid. The arable lands of southern California consist of "bottoms," bench lands, mesas or high bench lands, mountain soils, and seacoast soils. The coast valleys are strong in phosphates; the mountain lands have more lime and humus. Reddish gravelly soils, excellent for fruit, are a characteristic feature.

There is a silty soil in many places, which retains its tilth so well that a man can easily thrust an axe-handle down to the head in the light-umber soil.

The Coast Range, like southern California, has so wide a range of sorts that a hundred analyses would not be sufficient to exhaust the number of typical cases. Many of the light soils show an especial power for absorbing moisture, and a high percentage of humus. Phosphates will probably be the first things to be exhausted. As a rule, they are adapted to fruits rather than to grains. There are black adobe soil, redwood bottom, yellow and brick-red mountain soils, gravels, loams, and almost every possible variety and combination.

CHARLES HOWARD SHINN.

Niles, Cal., Sept. 3.

BOOK-REVIEWS.

An American Geological Railway Guide. By JAMES MACFARLANE. 2d ed., revised and enlarged. New York, Appleton. 8°.

FROM a geologic point of view, this is a model handbook for tourists. The names of the railway stations are arranged as in an ordinary time-table, with the distances in miles from the beginning of the line; but, instead of the times of running trains, the traveller is informed of the age of the bed-rocks and the height of each station in feet above the sea. Abundant footnotes also call attention to localities of special interest to the collector of fossils and minerals, or to quarries, mines, oil or gas wells, remarkable waterfalls, gorges, or mountain views.

Dr. Macfarlane is well known by his earlier work, "The Coal Regions of America." Since his death in 1885, his son has bestowed much care and effort, during the scanty leisure allowed by professional duties, to the completion of this new edition of the "Railway Guide." In this work he has been aided by many geologists, both of this country and Canada, who have contributed the portions relating to the regions covered by their field-work. Among these names we note Broadhead, J. L. and H. D. Campbell, Chamberlin, Chance, Chester, Collett, Condon, Cooper, Crosby, Dana, Darton, Davis, G. M. Dawson, Dwight, Emmons, Fontaine, Gannett, Gesner, Gilbert, Hague, Hall, Hilgard, Hitchcock, Hunt, Irving, Johnson, Kerr, Lesley, Loughridge, McGee, Newberry, Orton, Owen, Procter, Pumpelly, W. B. Rogers, Russell, Safford, Shaler, Smith, Smock, Stevenson, St. John, Todd, Uhler, Upham, White, Whitfield, G. H. Williams, Willis, A. and N. H. Winchell, Worthen, Wright. The book is prefaced by tables of the geologic formations and their descriptions, occupying about fifty pages, "intended for railway travellers who are not versed in geology."

A Stem Dictionary of the English Language. By JOHN KENNEDY. New York, Barnes (Amer. Book Co.). 8°.

THE author of this work believes that children in learning to read should trace words back to the stem from which they are derived, but that in so doing they should not go out of the bounds of their own language. Thus, he holds that *bene-* in the word *benefit* should be treated as the stem of the word, without regard to its previous history in Latin. With this view he has prepared this dictionary, giving the most important stems derived from Latin and other tongues, with the principal words in which they occur and their definitions, and also the foreign words from which they are derived. Stems of Saxon origin are not usually given,

as the student is presumed to be sufficiently familiar with them and their meaning. How useful the book may prove can only be determined by experience; but many pupils will be interested in thus tracing the various derivatives of a given stem. There is one serious defect in the execution of the work. The pages are encumbered with long notes, sometimes filling half a page, about such things as the atmosphere, gravity, gladiatorial shows, etc.,—notes which are sadly out of place in a dictionary. We noticed also some inaccuracies, such as calling the Latin *honestus* Greek, and the Greek *laos* Latin. The work is illustrated by numerous quotations, mostly in verse.

An Elementary History of the United States. By CHARLES MORRIS. Philadelphia, Lippincott. 12°. 60 cents.

THIS work covers the whole period of American history from the discovery of the continent to the present time; and yet it is all crowded into two hundred and forty pages. The natural result is that the narrative is too much condensed, and contains too much detail for so short a work. This is the common fault of brief histories, and not only renders them less interesting than they might be, but also tends to obscure the main outlines of the subject. Apart from this defect, however, Mr. Morris's work is pretty well done. We like in particular the attention he gives to the social life of the people and the progress of industry,—matters that are not only important in themselves, but also interesting to young people. The book is illustrated with both pictures and maps.

AMONG THE PUBLISHERS.

THE September issue of the *Contemporary Review* will contain an article covering some twenty-three pages, by Rudyard Kipling, entitled "The Enlightenment of Pagett, M.P.," which, in the form of a story, is a trenchant criticism on the National Con-

gress movement in India. The *Contemporary* is published in America by the Leonard Scott Publication Company at 40 cents per number.

—Messrs. Houghton, Mifflin, & Co. announce that they will have ready for publication in the early part of September a book by John Fiske, entitled "Civil Government in the United States, considered with some Reference to its Origins." In this book Mr. Fiske aims to set forth the principles and methods of civil government as understood and exemplified in the republic of the United States and in the several States; and he traces the rise and development of the various forms of government of towns, counties, cities, states, and the nation, with their relations to one another. Although of great interest to the general reader, the book is designed primarily for use in schools; and to make it still more practicable for this purpose, there have been added at the end of each section questions on the text, and at the end of each chapter suggestive questions and directions "designed to stimulate reading, investigation, and thought." These questions and suggestions have been prepared with great care by Frank A. Hill, the head master of the English High School at Cambridge, Mass. Mr. Fiske has also added a bibliographical note at the end of each chapter.

—The most important article in the *Political Science Quarterly* for September is that on "State Control of Corporations," by George K. Holmes. It is an account of what has been done in Massachusetts toward securing the rights of the public against corporations of every description, and is a very encouraging exhibit. The Massachusetts method consists in the maintenance of commissions whose duty it is to hear complaints, settle disputes when possible, and give advice to the Legislature on the one hand, and to the corporations on the other. This method has proved very successful in protecting the public against abuses; and, in Mr. Holmes's opinion, it only needs to be extended to trade com-

Publications received at Editor's Office,
Aug. 25—Sept. 6.

- DIEHL, Mrs. Anna Randall. *A Practical Delsarte Primer.* Syracuse, N.Y., C. W. Bardeen. 66 p. 16°.
- HAYWARD, R. B. *The Elements of Solid Geometry.* London and New York, Macmillan. 130 p. 16°. 75 cents.
- HEALTH for Little Folks. New York, Cincinnati, and Chicago, Amer. Book Co. 121 p. 12°.
- KENNEDY, J. *A Stem Dictionary of the English Language.* New York, Amer. Book Co. 282 p. 8°.
- MILNE, J. J., and DAVIS, R. F. *Geometrical Conics. Part I. The Parabola.* London and New York, Macmillan. 72 p. 12°. 60 cents.
- MORRIS, C. *An Elementary History of the United States.* Philadelphia, Lippincott. 250 p. 12°. 60 cents.
- ORPHEUS, The. Vol. I. No. 1. Aug. 15, 1890. St. Paul, Minn., Orpheus Publ. Co. 16 p. f°. \$1 per year.
- PRESTON, T. *The Theory of Light.* London and New York, Macmillan. 465 p. 8°. \$3.25.
- THRUSTON, G. P. *The Antiquities of Tennessee and the Adjacent States.* Cincinnati, Robert Clarke & Co. 369 p. 8°. \$4.
- U. S. DEPARTMENT OF AGRICULTURE. *Report on the Substitution of Metal for Wood in Railroad Ties,* by E. E. R. Tratman, C.E., together with a Discussion on Practicable Economies in the Use of Wood for Railway Purposes, by B. E. Fernow. Washington, Government. 363 p. 8°.

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